



The Ohio Coastal Management Program

As stewards of Lake Erie's coastal resources, we will attain and sustain a healthy coast by balancing its use and preservation.



The Cuyahoga County Board of Health

The Cuyahoga County Board of Health is a general health district that administers and enforces, within its health jurisdiction, all public health and sanitation laws of the State of Ohio. The general health district is comprised of 35 cities and 21 villages and townships, representing nearly 830,000 residents. The Board of Health offers community based programs that enable residents of the district to live in a healthy, environmentally safe community.



Cuyahoga County General Health District

- | | | | |
|------------------------|-------------------|--------------------|----------------------|
| Bay Village | Cleveland Heights | Maple Heights | Parma Heights |
| Beachwood | Cuyahoga Heights | Mayfield Heights | Pepper Pike |
| Bedford | East Cleveland | Mayfield Village | Richmond Heights |
| Bedford Heights | Euclid | Middleburg Heights | Rocky River |
| Berea | Fairview Park | Moreland Hills | Seven Hills |
| Bentleyville | Garfield Heights | Newburgh Heights | Solon |
| Bratenahl | Gates Mills | North Olmsted | South Euclid |
| Brecksville | Glenwillow | North Randall | Strongsville |
| Broadview Heights | Highland Heights | North Royalton | University Heights |
| Brook Park | Highland Hills | Oakwood Village | Valley View |
| Brooklyn | Hunting Valley | Olmsted Falls | Walton Hills |
| Brooklyn Heights | Independence | Olmsted Township | Warrensville Heights |
| Chagrin Falls Township | Linndale | Orange Village | Westlake |
| Chagrin Falls Village | Lyndhurst | Parma | Woodmere |



Contact Information

Cuyahoga County Board of Health

1375 Euclid Avenue, Suite 524
Cleveland, Ohio 44115
216-443-7520
216-443-7537
www.CCBH.net
hstark@CCBH.net

The Chagrin River Watershed Partners, Inc.

4145 Erie Street, Suite 203
Willoughby, Ohio 44094
440-975-3870
www.crwp.org
kdw@crwp.org

Cuyahoga County

Soil and Water Conservation District
6100 West Canal Road
Cleveland, Ohio 44125
216-524-6580

Ohio Department of Natural Resources

Office of Coastal Management
105 West Shoreline Drive
Sandusky, Ohio 44870
419-626-7980



Protecting Public Health &

providing the leadership

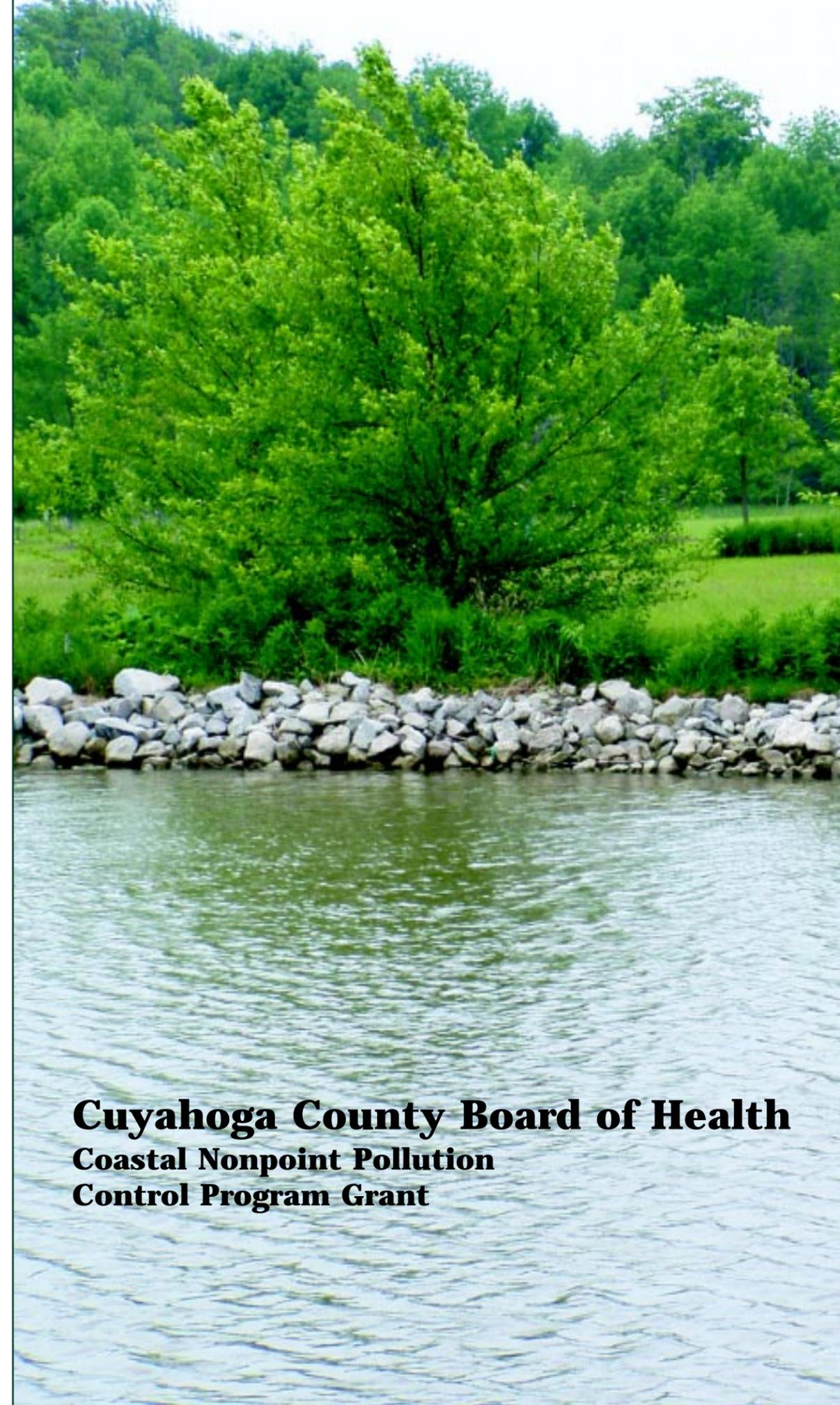
to improve and protect

the water quality

throughout

Cuyahoga County

and Lake Erie.



Cuyahoga County Board of Health Coastal Nonpoint Pollution Control Program Grant



The Cuyahoga County Board of Health received a grant from the Ohio Department of Natural Resource's Ohio-Great Lakes Coastal Restoration Program. This grant project was titled "The Chagrin River / Euclid Creek Water Quality Assessment and Sewage System Evaluation Project".

This project began April 1, 2002 and ended June 30th, 2003. The goal was to reduce the contamination within the Lake Erie watershed that emanates from inadequate household sewage treatment systems (HSTS) and to help assess water quality in the Chagrin River and Euclid Creek watersheds.

This project consisted of 6 tasks that included:

- Fecal Coliform Sampling.
- Evaluation of HSTS.
- Educational Outreach.
- Macroinvertebrate Sampling.
- Water Quality Sampling.
- Dissemination of Results.

The Cuyahoga County Board of Health is dedicated to improving water quality throughout the county. This grant project enabled our department to focus on two major watersheds and perform activities that would help in identifying problem areas. This information will now be provided to communities and other agencies in helping to identify and eliminate these pollution sources.

The Cuyahoga County Board of Health is appreciative of the Ohio-Great Lakes Coastal Restoration Program and the opportunity it provided to our agency. It has enabled our department to expand upon our existing water quality and household sewage programs by dedicating additional monies to educational projects and water quality monitoring equipment.

This brochure summarizes the grant project and highlights both the Euclid Creek and Chagrin River Watersheds and the organizations that are dedicated to protecting and improving these water resources.

Wetlands and Riparian Areas

1. Protect and preserve existing wetlands.
2. Restore degraded wetlands and construct new ones.

Critical Coastal Areas and Impaired or Threatened Waters

1. Enhance existing programs including: Ohio's Coastal Consistency, Submerged Lands Lease, Section 401 Water Quality Certification and Antidegradation, and No Discharge Zones.
2. Incorporate a better understanding of river form and process into water resources protection strategies.
3. Encourage county comprehensive land-use planning that meets specified minimum standards.
4. Develop a model Shoreline Management Program encouraging the adoption of county shoreline zoning to regulate development near Lake Erie shoreline areas.
5. Establish as a standard practice the shoreline and near-shore disposal of sand and gravel dredged from marina channels and waterways.

Developing Sustainable Watershed Protection Programs

1. Help watershed groups increase awareness of water quality issues.
2. Support the development and maintenance of sustainable watershed groups by providing funding for organizational development, planning, and implementation.

3. Use watershed-based nonpoint-source (NPS) information as an interdisciplinary theme in formal and informal educational settings.
4. Provide local groups with the tools and resources needed to educate local citizens about NPS pollution.
5. Provide information on the economic, health and social benefits of protecting water resources as an incentive for action.
6. Develop a statewide strategy for delivering NPS pollution messages and involving local businesses in providing marketing assistance for local initiatives.
7. Provide consistent NPS pollution messages to various media organizations and promote the concept of individual action and connectedness to local aquatic ecosystems.

Water Quality Monitoring and Tracking Techniques

1. Expand the evaluation of currently used BMPs and the effectiveness of existing water quality programs.
2. Update watershed and impaired segment restoration priorities as new data becomes available.
3. Improve and increase water quality monitoring.



A Summary of Coastal Nonpoint Program Plan Objectives

Information provided by
The Ohio Department of Natural Resources

Agricultural Sources

1. Implement a comprehensive monitoring program to target nonpoint source pollution initiatives and provide evaluation tools to determine the effectiveness of rural nonpoint source pollution abatement programs.
2. Develop and offer voluntary incentive programs to encourage local adoption of Best Management Practices (BMPs) based on targeting by the water quality monitoring program.
3. Initiate, implement, and use data from research to target nonpoint source pollution prevention efforts and develop science-based and economically sound pollution abatement initiatives.
4. Develop partnerships with private industry and local watershed or community organizations to initiate education programs and encourage voluntary adoption of BMPs.

Urban Areas

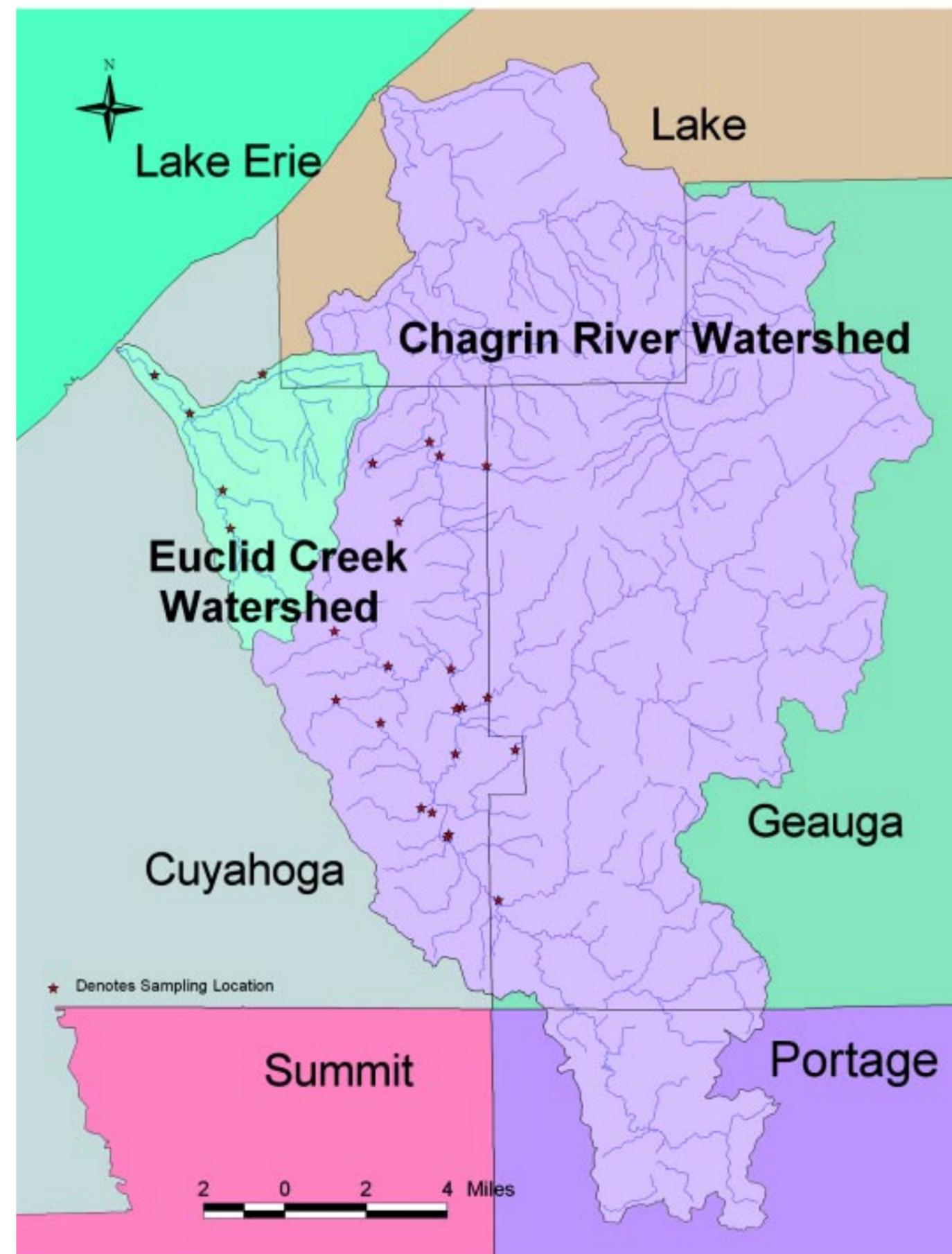
1. Strengthen support for urban stream protection and restoration by local government and residents.
2. Support community based watershed groups.
3. Increase oversight and performance of onsite sewage system programs.

Marinas and Recreational Boating

1. Use the Clean Vessel act to plan for and implement measures for proper disposal of marine sewage.
2. Strengthen regulations to control direct discharges and habitat alteration.
3. Increase interagency and program coordination to protect critical areas.

Hydromodification

1. Improve and enforce regulations and design standards to protect streams and natural stream function.
2. Improve voluntary protection of streams and natural stream function by providing incentives to private land interests.
3. Offer training and education on the functions of streams and the importance of maintaining natural stream integrity.



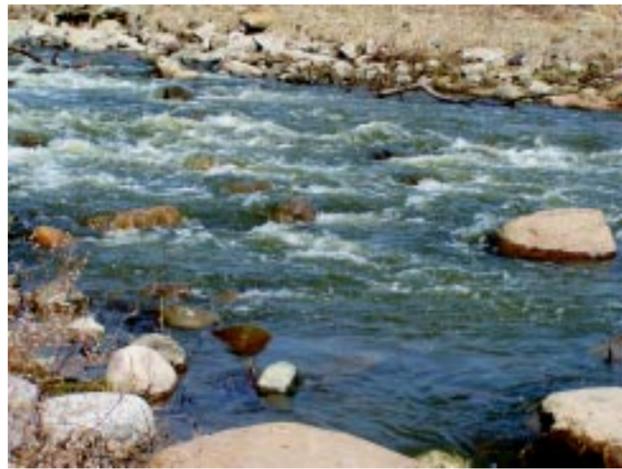
Chagrin River

*Information provided by Kyle Dreyfuss-Wells,
Director of the Chagrin River Watershed Partners, Inc.,
April 2003.*

The Chagrin River watershed drains approximately 265 square miles northeast of Cleveland, Ohio. The Chagrin watershed, like most of Northeast Ohio, was shaped by glacial activity. Many areas of the watershed, particularly along its steep hillsides and stream banks, contain loose sand and gravel that naturally erode at a high rate. Other areas of the watershed have clay soils that do not easily absorb water, allowing much of the rainfall and snowmelt to runoff quickly. As a result of this glacial past, the Chagrin River watershed has varied topography and naturally high rates of both flooding and erosion.

The Chagrin, a Lake Erie tributary, is recognized statewide as a high quality resource with 71 miles designated as State Scenic Rivers by the Ohio Department of Natural Resources (ODNR). Several of the Chagrin's tributary streams support Coldwater Habitat (CWH) aquatic life use designations from the Ohio Environmental Protection Agency (Ohio EPA). CWH use designation applies to waters that support assemblages of coldwater organisms. CWH is considered among the highest quality aquatic habitat in Ohio and the Chagrin River watershed is unique for the extent of this high quality habitat so close to a major urban area.

Other portions of the Chagrin River are designated as Warmwater Habitat (WWH). WWH use designation defines a typical warmwater assemblage of aquatic organisms. WWH is the principal restoration



target for the majority of water resource management efforts in Ohio and waters with this designation are considered to be in generally good health.

Ohio EPA's most recent sampling data on the Chagrin in 1994, 1995, and 1996 places the River on the Agency's 303(d) list of impaired streams. A

Total Maximum Daily Load (TMDL) study of the Chagrin is scheduled for 2006. This sampling data also indicates that many reaches of the Chagrin are not meeting their CWH or WWH aquatic life use designations. The principal causes of impairment and non-attainment in the Chagrin are hydromodification, sedimentation, and pollution from urban storm water runoff;

nutrient enrichment from failing home sewage treatment systems and suburban lawn care; sedimentation from streambank erosion and poorly controlled construction sites; riparian encroachment from land use changes, and the filling and draining of wetlands. In 2002 the Chagrin River Watershed Partners (CRWP), completed a study of wetland loss in the watershed, estimating both historic and current wetland acreage using available digital data. The initial estimates place wetland loss at approximately 80%. Adequate restoration and mitigation for the assimilative capacity of these lost wetlands has not been completed within the watershed.



Along with requested point of sale inspections and complaint investigations, the Cuyahoga County Board of Health conducts operational maintenance inspections and assessments of home sewage treatment systems throughout the health district. Since the effluent from home sewage systems has been identified as a major contributor to non-point source pollution in our waterways, an on-going inspection and maintenance program is a necessity.

The Operation and Maintenance Program encompasses an overall water quality and watershed based approach in hopes of minimizing water quality problems emanating from failing household sewage systems. As sewage systems are evaluated in a community, the data gathered is provided to local officials. This information can then be utilized to help determine the most effective means of eliminating pollution sources in a specific area. In many circumstances, the design and installation of a sanitary sewer is a feasible solution for eliminating failing sewage systems. Where sanitary sewers are determined not to be feasible, the repair of failing home sewage treatment systems will be on going.

One project task of this grant focused on assessing approximately 2,700 HSTS within the Chagrin River and Euclid Creek Watersheds. These assessments were conducted mainly to educate the homeowners as to the care and maintenance of their HSTS and to identify any public health nuisance concerns that may be present.

During these assessments, each homeowner received an educational packet composed of a Household Sewage Treatment System Record Folder. This folder contained fact sheets on different HSTS designs, care and maintenance and any information that the CCBH had concerning their individual septic system, including drawings of their system.

Operation & Maintenance Program

Additionally, full sewage system evaluations were conducted throughout the two watersheds. Those systems that were found to be in failure and were located in communities where sanitary sewers are not being actively installed, have been required to be replaced and upgraded with new HSTS. In those locations where sanitary sewer installations are planned, those failing systems were identified and the homeowners made aware that they must connect to the sanitary sewer once it becomes accessible.

During this project, 180 HSTS were found to be in failure or not operating as designed and were replaced within these watersheds.



Macroinvertebrate Monitoring

Macroinvertebrates are animals without a backbone that are visible without magnification. Aquatic macroinvertebrates live in or near the water and their identification is a reliable tool in assessing the general health of a river or stream. For example, when unfavorable changes occur in a river, such as an increase in sediment, the diversity and abundance of species may decline.

Macroinvertebrates are typically collected for identification in riffle areas of a river or stream. A riffle area, also referred to as rapids, is an area where shallow water races downstream over areas of stones or gravel. These areas provide an ideal source of shelter, food, and a continuous flow of water with high dissolved oxygen levels.

Aquatic macroinvertebrates are classified based on their sensitivity to pollutants. There are three classifications: Group One macroinvertebrates (taxa) are sensitive to pollutants and their abundance represents good water quality conditions. Group Two taxa are moderately sensitive to pollutants and can survive in a variety of water quality conditions. Group Three taxa are very tolerant to pollutants and their abundance represents poor water quality conditions.



Examples of Group One taxa include caddisfly larva, gilled snails, and riffle beetles. Examples of Group Two taxa include crayfish, sowbugs, and clams. Examples of Group Three taxa include leeches, aquatic worms, and midge larva. The overall assessment of a river or stream location involves a tally of all taxa present, which results in a stream quality assessment rating of excellent, good, fair, or poor.

The Ohio Department of Natural Resources, Division of Natural Areas & Preserves, conducts an Ohio Scenic Rivers Program, of which the CCBH has been a volunteer participant for several years. As part of the Ohio Department of Natural Resources grant, the CCBH conducted macroinvertebrate monitoring in the Chagrin River and Euclid Creek watersheds. Five locations were monitored in the Chagrin River Watershed, all of which received an excellent stream quality assessment rating. Three locations were monitored in the Euclid Creek Watershed. These locations received stream quality assessment ratings of fair to good. An *Ohio Scenic Rivers Stream Quality Monitoring Assessment Form* was utilized to determine the ratings.

The CCBH will continue to perform macroinvertebrate monitoring in selected areas throughout the Chagrin River and Euclid Creek Watersheds and collaborate with the Ohio Department of Natural Resources Scenic River's Program. All sampling data will be shared with ODNR and other appropriate agencies and organizations within these watersheds.

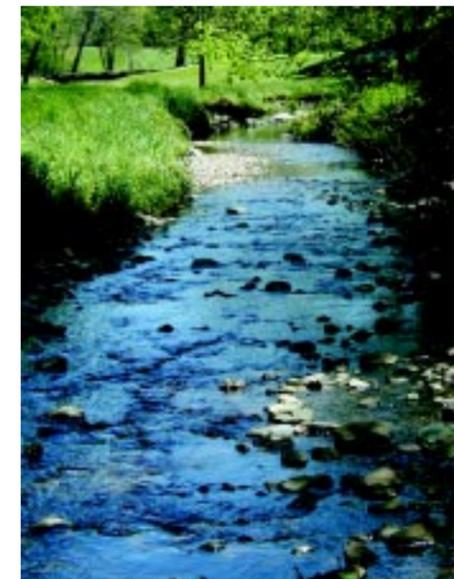
Land use and the problems associated with unmanaged development form the common theme among the watershed problems highlighted earlier. Development increases both the flow and velocity of storm water runoff and, with the exception of nutrient pollution due to home sewage treatment systems, the water quality problems of the Chagrin River watershed are due to increases in water quantity. The current land use practices in the Chagrin have caused a variety of flooding, erosion, and water quality problems. These concerns are seen in Ohio EPA's sampling data as well as in watershed wide and localized flooding and erosion. These problems cost local governments and residents as they must clean up from flooding, rebuild threatened or damage roads and bridges, and protect homes and infrastructure from flooding and eroding streams.

Current land use practices cause flooding, erosion, and water quality problems in two ways, both of which are linked to increases in water quantity. Traditional land use planning, the guide for a community's long-term development, does not account for the amount and functions of floodplains, wetlands, and open spaces that naturally control water quality and quantity. As a result, communities and developers are not aware of these resources and they are lost when land is developed. Traditional land use practices then compound this loss of natural resource functions by increasing impervious cover. Impervious cover includes roads, rooftops, driveways, lawns, and other surfaces that do not absorb storm water, and impervious cover increases both the volume and velocity of storm water runoff. The result of these two impacts of current land use practices is that as the cause of the flooding, erosion, and water quality problems - impervious cover - grows, the ability of floodplains, wetlands, and open spaces to control these problems declines.

The Chagrin River Watershed Partners is unique in Ohio. They are one of a handful of organizations nationwide that is organized by communities and structured to support them in their natural resource management efforts.

Faced with a high quality natural resource experiencing the stresses of land use change, the communities in the Chagrin River watershed have a unique opportunity to implement innovative, prevention focused solutions to minimize the impacts of development. To assist member communities in capturing this opportunity, CRWP has developed a series of recommendations on minimizing the impacts of development. These recommendations are based on the following three (3) principles:

- 1. Natural resources provide services:** Wetlands, riparian areas, and other natural resources provide flood control, erosion control, and water quality protection services.
- 2. Prevention is cheaper than remediation:** Preventive steps to maintain the services of natural resources cost less than remedial actions to recreate these services.
- 3. Local governments have a role:** Actions to maintain these services are matters of public health and safety and are within local government authorities.



Euclid Creek

*Information provided by Kristyn Albro,
Euclid Creek Watershed Coordinator,
Cuyahoga Soil and Water Conservation District, April 2003.*

The Euclid Creek watershed drains an area of 23 square miles, and encompasses over 46 miles of streams and headwater tributaries. The population of the watershed is estimated at 60,000 residents and includes the communities of Beachwood, Cleveland, Euclid, South Euclid, Lyndhurst, Richmond Heights, Highland Heights, Mayfield Heights, Willoughby Hills and small portions of Mayfield Heights, Shaker Heights and Pepper Pike.

Currently, the Ohio Environmental Protection Agency has determined that the water quality of the main branch of Euclid Creek is not in attainment for warm water standards, while about 50% of the east branch is in partial attainment. The cause of these impairments includes high organic enrichment, habitat alterations, ammonia, and heavy metals. Sources of these impairments include combined sewer overflows, point source discharges, urban runoff, channelization, failing septic systems and spills.

There are currently several key grass-roots and community based initiatives underway in the watershed. The first initiative includes the Friends of Euclid Creek, a citizen-based group focused on improving the water quality of the creek and protecting remaining greenspace areas in the watershed.

Another initiative underway is the Euclid Creek Watershed Council, which includes community and municipal leaders and represents most of the communities in the watershed. The goal of the Council is to address issues of water quality and storm water on a watershed scale, while promoting public education and involvement with this unique resource.

One exciting study recently conducted by the Kent Urban Design Center and the Collinwood & Nottingham Villages Development Corporation has focused on the revitalization of the St. Clair Avenue corridor and the enhancement of

public access to Euclid Creek. This study was conducted in conjunction with the Cuyahoga County Planning Commission's Greenspace Plan which provides a comprehensive evaluation of remaining greenspace resources in the county and provides a vision for connecting these resources.

The next initiative in the watershed will include a culmination of the stakeholder involvement and interest in the watershed through the creation of a watershed plan. This project will be managed by the Euclid Creek Watershed Coordinator, and supported through the Euclid Creek Watershed Council and the Cuyahoga Soil and Water Conservation District. This plan will help to inventory existing conditions and resources and will provide an opportunity for the public to create a vision for the watershed. The completed watershed plan will identify the critical steps needed to fulfill this vision and present a format for implementation.

Due to the vast support and interest in the Euclid Creek watershed, these initiatives will help to serve as a model for community enhancement and stream restoration in urban areas.



Water quality is essential to public health, our natural environment, and economic development. The Cuyahoga County Board of Health conducts an extensive water quality program. The focus of this program is an overall watershed based approach when dealing with water quality issues. Activities within this program include:

- Identifying and eliminating public health nuisances and hazards in our surface waters
- Surveying the various watersheds throughout the county
- Supporting the Household Sewage, Storm Water, Semi-public Sewage, Bathing Beach and Parks & Recreation Programs
- Educating the public on Non-Point Source Pollution issues
- Participating in local watershed protection groups and meetings
- Collecting water quality samples from permanent sites throughout our watersheds
- Conducting biological, chemical, and physical assessments of stream segments.

Stream Monitoring and Permanent Monitoring Programs

The Board of Health has conducted a stream monitoring program since the late 1980's. This program has allowed for the chemical, physical and biological monitoring of water quality in our jurisdiction. The information collected from this program has documented the need for the Board of Health's Operation and Maintenance Program for Household Sewage Treatment Systems. To date thousands of water quality samples have been collected and all data is archived in our water quality computer database. In 1999, the Board of Health also established a permanent sampling program throughout the county's watersheds.



Water Quality Program

The purpose of a permanent water quality monitoring program is to determine quantitative cause and effect relationships in water quality, obtain sufficient data for updating water quality management plans, determining effluent limits, identifying nonpoint sources of pollution and classification of stream segments throughout the watershed. Additionally, the monitoring program sets priorities for establishing or improving existing pollution controls and determining whether additional water quality management strategies may be required to further identify impediments to the natural resources.

Currently, over 50 permanent water quality-monitoring sites have been established within the various watersheds in Cuyahoga County. This data is used to obtain general baseline conditions and to identify problem areas potentially being impacted by sources of water pollution. This information is then provided to the responsible agencies and communities for any follow up activities that may be required.

As part of the Ohio Coastal Nonpoint Program's Grant project, the Board of Health was able to establish additional permanent sampling locations in both the Euclid Creek and Chagrin River Watersheds. A total of 20 sites were established in the Chagrin River Watershed and 5 within the Euclid Creek Watershed. The parameters tested included:

- | | |
|--------------------|------------------------|
| □ Fecal Coliform | □ Dissolved Oxygen |
| □ Total Phosphorus | □ Specific Conductance |
| □ Stream Velocity | □ Ammonia |
| □ Turbidity | □ pH |
| □ Suspended Solids | □ Water Temperature |

The Board of Health will continue to monitor the permanent sampling locations and will work with all appropriate agencies when impairments are identified.

